

COMMONWEALTH OF MASSACHUSETTS
Department of Telecommunications and Energy

RESPONSE OF THE ATTORNEY GENERAL TO THE
SECOND SET OF INFORMATION REQUESTS FROM THE
BAY STATE GAS COMPANY
DTE 05-27

Dated: August 2, 2005

Responsible Party: Jon Cavallo

BSG-AG-2-25 Refer to the Cavallo Testimony at 8, lines 15-18. If the Company now cathodically protects all newly installed coated steel mains, and has done so since 1971 in compliance with federal law, or it installs plastic mains, how is it possible that the Company may “unwittingly replicate conditions that will cause future corrosion and leak problems in its repaired and replaced infrastructure?”

Response: The Company’s failure to conduct a root cause analysis to determine the cause of the accelerating leak rate on its distribution system makes it difficult to respond to this question in the abstract. While the Company claims that a root cause analysis will produce nothing “actionable”, it is difficult to understand how the Company arrived at this conclusion since it does not know what a root cause analysis may reveal about the Company’s operation, maintenance and management practices.

Mr. Cavallo will provide examples from this case of what the process of a root cause analysis might reveal based on the information developed to date, and how that information might impact operations at the Company in the future.

● **Failure Analysis vs Root Cause Analysis**

As an initial matter, implicit in the Company’s question is a seeming confusion between a “failure analysis” and a “root cause analysis.” In general terms, a “failure analysis” will demonstrate exactly what its name implies: why a material failed to perform. In instance of the two leaking pipes observed in the field, Mr. Cavallo would agree that the pipes failed because of corrosion. A “root cause analysis” is a more searching, dynamic inquiry and, generally speaking, is a procedure for ascertaining and analyzing the causes of problems in an effort to determine what can be done to solve or prevent them.

● **Management Failure**

Depending on how a root cause analysis is structured, it may reveal a wide range of causes for the Company’s accelerating leak rate problem, including a reduction in the activity in Company’s main replacement program that leaves high risk pipe in the ground which, in turn, continues to leak from corrosion. According to Mr. Cavallo’s interview with a long-time Company leak repair employee, in recent years at Bay State Gas Company the standing order to crews was to fix the leak using clamps, not to consider replacing the affected section of pipe.

This standing order to repair crews is contrary to advice provided by the DOT regarding pipeline repair: “If several leaks are found and extensive corrosion has taken place, the most effective solution is to replace the entire length of deteriorated pipe.” Guide Manual For Operators Of Small Natural Gas Systems, Chapter 6, Repair Methods: Plastic and Metal (Sample Guide) http://ops.dot.gov/regs/small_ng/Chapter6_2.htm As noted by the Company’s expert in the Rudden Report, “Industry studies have shown that ‘when a section of pipeline system starts to develop leaks, further leaks will develop at a continuously increasing rate.’” AG-2-16(b), p. 4. Letting a distribution infrastructure degrade without a proper replacement plan is the type of management problem that could unwittingly cause leak problems in the future regardless of the main material type.

● **Improper Backfill On Repairs**

If the root cause of the Company’s accelerating leak rate includes buried stones coming in contact with a main, for example, then the Company’s current repair procedure of replacing those stones back into the trench does nothing to mitigate this risk factor on the repaired pipe. The Company may have been burying repaired pipe with improper backfill for many years, a situation that would not be remedied when the pipe is replaced, perhaps many years later, with clean bedding and backfill. Mr. Cavallo notes that the Company’s own Operating and Maintenance Procedures Manual does not recommend simply reburying the improper bedding and backfill around repaired pipe. Failure to adhere to the Company’s own Operating and Maintenance Procedures Manual is the type of management problem that could unwittingly cause leak problems in the future.

● **Corrosive Soil Conditions And Plastic Pipe Copper Locator Wire**

If the root cause analysis of Company’s accelerating leak rate includes corrosive soil conditions, for example, then the Company’s copper locator wire installed with new plastic mains may be subject to accelerated deterioration. When this wire degrades to the point where it no longer serves its designed function of permitting the plastic main to be located for Dig Safe purposes, then the exact location of the main will be lost. Not being able to use the locator wire to find the main for repair, replacement, line extension, the addition of a service or for other excavations would increase risk of damage to the pipe from excavation, and consequently increase the risk of personal injury and property damage.

While these examples of what the process of a root cause analysis may reveal are informed by the limited information made available by the Company in this proceeding, a full root cause analysis would certainly provide concrete answers to the apparent paradox confronting the Company: the leak rate continues to rise while the Company claims to be diligently replacing mains and services.